

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE
BOARD OF PATENT APPEALS AND INTERFERENCES**

APPELLANT: Colson et al.
SERIAL NO.: 09/869,941
FILED: 04 January 2002
FOR: Non Woven Fabric and Method and Apparatus for
Manufacturing Same
EXAMINER: Befumo, J.L.
GROUP: 1771
CONF. NO.: 4413

Board of Patent Appeals and Interferences
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF UNDER 37 C.F.R. §41.41

In response to the Examiner's Answer dated February 8, 2007, Appellant submits this reply brief, which includes the sections specified in MPEP Section 1208.

Respectfully submitted,

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STATUS OF CLAIMS

Claims 158-199 are being appealed. The status of all claims filed in this application is as follows:

1-157. (Cancelled).

158. (Rejected) A nonwoven fabric comprising:
a first layer of substantially parallel first yarns; and
a second layer of substantially parallel second yarns;
the first and second yarns being substantially perpendicular to one another and the
first and second layers being adhered together with an adhesive, wherein:

- (a) the adhesive is applied to one side of the first layer of substantially parallel yarns in a discontinuous manner;
- (b) the adhesive forms random bridges between substantially parallel yarns of the first layer; and
- (c) the adhesive is located substantially only between the first and second layers of the adhered together substantially perpendicular yarns.

159. (Rejected) The nonwoven fabric of claim 158, wherein the adhesive is on only one side of the first yarns.

160. (Rejected) The nonwoven fabric of claim 159, wherein the substantially parallel first yarns in the first layer are held together to form a sheet by the bridges of the adhesive which prevent twisting of the individual first yarns in the first layer.

161. (Rejected) The nonwoven fabric of claim 159, wherein the adhesive is on the one side of the first yarns at a level of from about 5 weight percent to about 25 weight percent, based upon the total weight of the sheet of the first yarns.

162. (Rejected) The nonwoven fabric of claim 161, wherein the total weight of the sheet of the first yarns is about 50 g/m^2 and the adhesive weight is about 2 to 15 g/m^2 .

163. (Rejected) The nonwoven fabric of claim 161, wherein the total weight of the sheet of the first yarns is about 50 g/m^2 and the adhesive weight is about 5 to 10 g/m^2 .

164. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the first yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite.

165. (Rejected) The nonwoven fabric of claim 164, wherein the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers.

166. (Rejected) The nonwoven fabric of claim 164, wherein the natural fibers are selected from the group consisting of cotton fibers and wool fibers.

167. (Rejected) The nonwoven fabric of claim 164, wherein the metal fibers are selected from the group consisting of copper, gold, aluminum, silver and platinum.

168. (Rejected) The nonwoven fabric of claim 164, wherein one or more of the first yarns are glass fibers.

169. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the substantially parallel first yarns have been formed in a warp-direction and supported and bonded on only one side by the adhesive.

170. (Rejected) The nonwoven fabric of claim 169, wherein the adhesive has been applied to the first yarns by dip/nip saturation, spraying, gravure coating, or kiss coating.

171. (Rejected) The nonwoven fabric of claim 170, wherein the adhesive has a thickness of about 0.25 mil to about 1 mil.

172. (Rejected) The nonwoven fabric of claim 170, wherein the adhesive is a heat activatable adhesive.

173. (Rejected) The nonwoven fabric of claim 172, wherein the adhesive is a hot melt adhesive.

174. (Rejected) The nonwoven fabric of claim 173, wherein the adhesive is a hot melt copolyester polymer.

175. (Rejected) The nonwoven fabric of claim 170, wherein the adhesive is a scrim or lace web of adhesive or a meltblown adhesive.

176. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the adhesive is from about 5 to 20 percent by weight of the total weight of the fabric.

177. (Rejected) The nonwoven fabric of claim 176, wherein the adhesive is from about 10 to 15 percent by weight of the total weight of the fabric.

178. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the second yarns extend at an angle of about 80 degrees to about 89.7 degrees relative to the first yarns.

179. (Rejected) The nonwoven fabric of claim 178, wherein the second yarns extend at an angle of about 85 to about 89.7 degrees relative to the first yarns.

180. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the first yarns are equally spaced apart and the second yarns are equally spaced apart.

181. (Rejected) The nonwoven fabric of any one of claims 158-163, wherein the first layer and/or the second layer has a density of at least 40 yarns per inch in a transverse direction of the yarns.

182. (Rejected) The nonwoven fabric of claim 181, wherein the first layer and/or the second layer has a density of between 40 and 140 yarns per inch in a transverse direction of the yarns.

183. (Rejected) The nonwoven fabric of claim 182, wherein the first layer and/or the second layer has a density of between 60 and 100 yarns per inch in a transverse direction of the yarns.

184. (Rejected) The nonwoven fabric of claim 183, wherein the first layer has a density of 40 to 90 yarns per inch of 30/1 to 36/1 count yarn.

185. (Rejected) The nonwoven fabric of claim 183, wherein the second layer has a density of 90 to 140 yarns per inch of 36/1 count yarn.

186. (Rejected) The nonwoven fabric of claim 164, wherein the second yarns are selected from the group consisting of polymer fibers, natural fibers, synthetic fibers, composite fibers, carbon fibers, glass fibers, metallic fibers and graphite.

187. (Rejected) The nonwoven fabric of claim 186, wherein the polymer fibers are selected from the group consisting of polyester, polyethylene, rayon, polypropylene and nylon fibers.

188. (Rejected) The nonwoven fabric of claim 186, wherein the natural fibers are selected from the group consisting of cotton fibers and wool fibers.

189. (Rejected) The nonwoven fabric of claim 186, wherein the metal fibers are independently selected from the group consisting of copper, gold, aluminum, silver and platinum.

190. (Rejected) The nonwoven fabric of claim 186, wherein one or more of the second yarns are glass fibers.

191. (Rejected) The nonwoven fabric of claim 186, wherein one or more of the first yarns are spun polyester yarns.

192. (Rejected) The nonwoven fabric of claim 186, wherein one or more of the second yarns are single strand cotton yarns.

193. (Rejected) The nonwoven fabric of claim 169, wherein the second yarns have been formed in a weft-direction and a side of the second yarns are supported by, and adhered to, the one side of the first yarns by the adhesive, applied to only the one side of the first yarns.

194. (Rejected) The nonwoven fabric of claim 193 which has a weft-direction strength equal to its warp-direction strength.

195. (Rejected) The nonwoven fabric of claim 193, wherein the denier of all the first and second yarns is approximately the same.

196. (Rejected) The nonwoven fabric of claim 193, wherein the denier of some of the first yarns is different and/or the denier of some of the second yarns is different.

197. (Rejected) The nonwoven fabric of claim 193, wherein the denier of all the first yarns is the same and the denier of all the second yarns is the same.

198. (Rejected) The nonwoven fabric of claim 193, wherein the denier of the first yarns is different from the denier of the second yarns.

199. (Rejected) The nonwoven fabric of claim 193, wherein some of the second yarns are of a smaller denier than the first yarns.

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GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Five rejections have been maintained by the Examiner:

Rejection No. 1:

Claims 158-161, 164-166, 169, 170, 172-176, 178, 179, 186-188, and 192-199 have been rejected under 35 U.S.C. §102(b) as being anticipated by Sabee (U.S. 4,910,064).

Rejection No. 2:

Claims 158-167, 169-189, and 192-199 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hartstein (U.S. 3,591,434) in view of Jarrell et al. (U.S. 5,294,258).

Rejection No. 3:

Claims 162, 163, 167, 168, 177, 180-185, and 189-191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sabee (U.S. 4,910,064).

Rejection No. 4:

Claims 168, 190 and 191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hartstein (U.S. 3,591,434) and Jarrell et al. (U.S. 5,294,258) as applied to claims 164 and 186 above, and in further view of Pittman (U.S. 3,753,842).

Rejection No. 5:

Claims 168, 190, and 191 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sabee (U.S. 4,910,064) as applied to claims 164 and 186 above, and in further view of Pittman (U.S. 3,753,842).

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ARGUMENT

Appellant wishes to point out the following errors in the Examiner's Answer:

1. The Examiner's Answer (at pages 3-4 and 11-12) ignores Figures 9 and 10 of Sabee US 4,910,064 which (as pointed out on pages 21-24 of Appellant's Main Brief) clearly show that Sabee discloses having adhesive on both sides of his layers of parallel yarns – even when the adhesive is applied from only one side. This is a critical distinction between the present invention and this prior art reference, as discussed below.
2. The Examiner's Answer (at pages 12-13) mischaracterizes the significance of the limitation of Appellant's main claim 158, namely that “adhesive is located substantially only between the first and second layers”.

This limitation excludes more than insignificant amounts of adhesive being located anywhere except between the layers. This is confirmed by pars. 10-12 and 149 of the present application (which describe applying adhesive to “only one side of the warp yarns” of the claimed fabric) and by pars. 16, 20, 127, 167 and 171 of this application (which describe the importance of having low amounts of adhesive between the layers of the claimed non woven fabric in order to provide it with the “feel of a woven material” and to provide it with the “softness and hand” of a woven material).

By comparison, Figures 9 and 10 of Sabee clearly show significant amounts of adhesive **on both sides of his yarns** – even when the adhesive is applied from only one side.

3. The Examiner's Answer (at pages 5-6 and 13) improperly combines Hartstein US 3,591,434 with Jarrell US 5,294,258.

Hartstein discloses a non woven fabric formed by laminating loose warp-direction yarns to loose weft-direction yarns with a thermoplastic film.

Jarrell discloses laminating “porous” woven or non-woven textiles – not loose yarns – with a “porous” adhesive matrix to form a “breathable” fabric.

The Examiner’s Answer asserts (at page13) that “Jarrell does not exclude the use of the parallel filaments [of Hartstein] to create a non woven fabric.” However, this statement is not true. It is contradicted by the fact that Jarrell discloses only laminating “porous webs” to each other whereas:

- (a) Hartstein’s loose warp-direction yarns, before lamination, would not contain or form any pores (because of the absence of weft-direction yarns crossing the warp-direction yarns) and
- (b) Hartstein’s loose weft-direction yarns, before lamination, would not contain or form any pores (because of the absence of warp-direction yarns crossing the weft-direction yarns).

Conclusion:

In view of these errors, as well as the arguments submitted in Appellant’s Main Brief, the Board is respectfully requested to reverse the Examiner in this Appeal.

Respectfully submitted,

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